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Masculinity and the culture of rising sea-levels in a mangrove lagoon in Papua New Guinea

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Abstract

In the wake of rising sea-levels, dialogue about climate change and resettlement took on new urgency among the Murik, a lagoon-dwelling, coastal people in Papua New Guinea. A theoretical question is raised by their discourse: how to conceptualize the relationship among multiple perspectives of climate change that does not pre-empt local voices? Bakhtin's concept of the chronotope and Lacan's notion of the symbolic phallus in the time and space of the other are utilized in this analysis. In particular, chronotopes of modernity and global risk contest a chronotope of local masculinity. These concepts, in turn, are challenged by a chronotope of doubt, and the latter seems to be winning the argument, as it were. The four chronotopes, I argue, combine in dialogue to constitute an otherwise ignored view of rising sea-levels, not only in Papua New Guinea but in climate-change discourse, more broadly. Multi-sited ethnography is analyzed in support of this argument.

Introduction

In the Pacific Islands, the total area of mangrove lagoons consists of about 343,735 ha, the largest areas occurring in Papua New Guinea, Solomon Islands, Fiji and New Caledonia. Mangrove resources have been exploited for construction and fuel wood, herbal medicines, and the gathering of shellfish and fish. There are two main environmental settings for mangrove lagoons in the Pacific, deltaic and estuarine mangroves on high islands and embayment and reef flat mangroves on low islands. The former develop on islands with river systems that deliver significant quantities of fluvial sediment from catchments to coastal zones. Large mangrove ecosystems may then develop on sedimentary shorelines with gentle gradients between mean sea level and the level of high water spring tides.

Growing in the upper half of the tidal range, the close relationship of every aspect of their functional ecology to sea-level renders mangrove lagoons particularly vulnerable to disruption by sea-level rise. Stratigraphic records of Pacific Island mangrove ecosystems during the Holocene period demonstrate that low island mangroves can keep up with a sea-level rise of up to 12 cm per 100 years. High island mangroves can keep up with a sea-level rise of up to 45 cm per 100 years, depending on the supply of fluvial sediment. When these rates exceed the rate of accretion, mangrove swamps experience problems of substrate erosion, inundation stress and increased salinity (Ellison 2000).

Although it is expected that low island mangroves are more susceptible to rising sea-levels due to relatively lower rates of sediment accretion than mangroves along high island coasts, both are expected to be among the most sensitive ecosystems *vis a vis* the magnitude of sea-level rise anticipated by Bamber et al. (2009) of 3.2 m due to the collapse of the West Antarctic Ice Sheet. "Comparison with rates of mangrove accretion indicates that high island mangrove [lagoons]… will experience serious problems with rising sea level in the next 50 years and low island mangroves could already be under stress" (Ellison 2000:294).

At present, climate change discourse is largely built around the interests and concerns of scientists and politicians in industrialized countries. That is to say, it is dominated by the major greenhouse gas emitters. As a political ideology, it has been dismissed as little other than "scientific neocolonialism" (Hay et al. 1995:49–50). But what of the voices and viewpoints of the indigenous people who live in the intertidal zones (Edwards 2000:259)? This paper, which is a companion piece to an earlier article (Lipset 2011), concerns a community of mangrove dwellers in Papua New Guinea (PNG), whose perspectives of their ecologies and of potential adaptations, have been marginalized, to say the least, both politically and academically. It is part of an ongoing project about local meanings of a vulnerable, intertidal environment during the time of climate change, rising sea levels, and possible resettlement. Its specific ethnographic focus is the Murik Lakes people (circa 2007–11), who live on the barrier beaches that separate the largest mangrove lagoon in Papua New Guinea from the Pacific Ocean at the mouth of the Sepik River (see Fig. 1).

A theoretical question is raised by their discourse: how to conceptualize the relationship among multiple perspectives of climate change that does not pre-empt local voices? Bakhtin's concept of the chronotope and Lacan's notion of the symbolic phallus at risk in the time and space of the other are utilized to analyze this polyphonic discourse. In particular, chronotopes of modernity and global risk contest a chronotope of local masculinity. These concepts, in turn, are challenged by a chronotope of doubt, which seems to be winning the day. The four chronotopes, I argue, combine in dialogue to constitute an otherwise ignored view of rising sea-levels, not only in Papua New Guinea but in climate-change discourse, more broadly (cf. Rudiak-Gold 2013).

Murik and Papua New Guinea

PNG in general, and Murik in particular, present an ethnographically "strategic situation" for analysis of local and global dialogue about climate change and rising sea levels (Marcus 1995:111). PNG has growing global, but limited national and market, integration (Foster 1995, 2002). The relationship of the Murik to the state is a microcosm of this situation. PNG has offered little to Murik communities. Although the former Prime Minister, Sir Michael Somare, was Murik, the state in many senses does not create much by way of a concrete presence. Three of the five Murik villages, meanwhile, stand at the edge of their vulnerability to place-loss, but are not quite in the midst of it.[1] Big Murik, Darapap and Karau villages are located at sea-level on narrow beaches that divide the Pacific Ocean from a large system of shallow lagoons which extend about 18 miles along the coast and about 5.5 miles inland (see Fig. 1), and make up the largest mangrove ecology in PNG.[2] But more significantly, the vulnerability of space is an integral part of Murik culture. Rather than new, a concept of risk in time

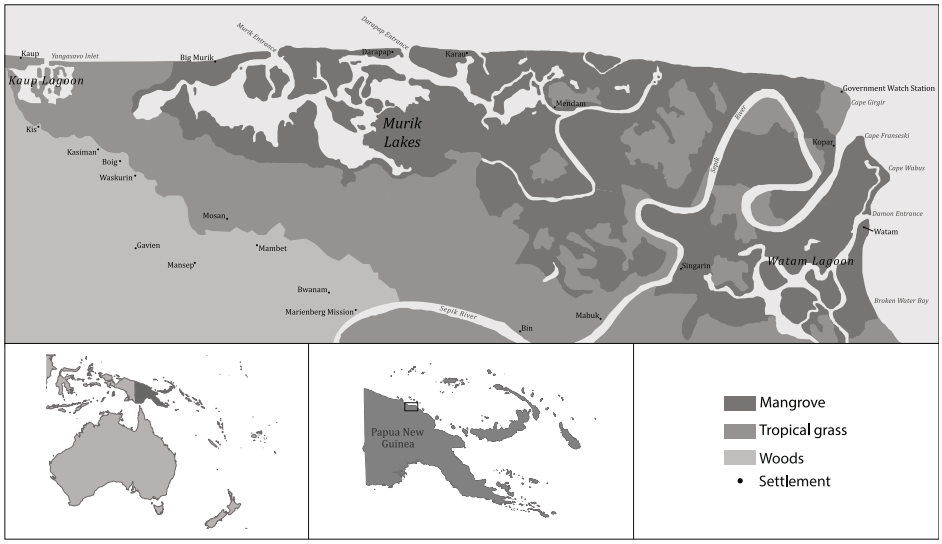

Fig. 1 North Coast, Papua New Guinea and the Murik Lakes

and space in Murik ethnohistory finds extensive expression in imagery of refugee migration, boats, overseas travel, regional trade, and, most important for the purposes of this paper, in omnipresent metaphors of masculine vulnerability. The political and environmental exigencies to which all these signifiers respond arose long before the emergence of the notion of the 'global present' or the idea that modernity has detached culture from the societies and places from which it might have otherwise arisen (Hannerz 1992).

The Murik practice subsistence aquatic foraging. Men and women exploit their lagoons by harvesting the fish and shellfish that spawn there through a sexual division of labor to which they continue to adhere. Despite the persistence of their traditional economy amidst market-based values that encompass them, the spatial orientation of both genders is outward, beyond the becalmed waters of their brackish lagoons. From a system of regional markets in which they are avid participants, they purchase and barter for the garden produce and sago they otherwise lack. In addition, their hereditary trade network, based in gift-exchange, extends inland and upriver, out to the Schouten Islands offshore, as well as east and west along the north coast (see Fig. 1, see Lipset 1985; Barlow 1985). Although of course they live in an equatorial climate and the state provides neither electricity nor running water, the Murik appreciate the properties of ice (if not Arctic glaciers). They started using it in the 1960s when Murik men began to market fresh fish in the provincial capital about 45 miles to west along the north coast, by ferrying ice-blocks in crates to the villages and returning them to town full of fish. But market integration only increased slowly in subsequent decades. Isolated as they remain from the state, it has expanded very slowly, far outstripped by the incorporation of modern forms of symbolic capital, such as education, missionary Christianity and the mass media. The Catholics established an SVD missionary in the village of Big Murik in 1911. A Seventh Day Adventist mission was set up in Darapap village in 1951. But even as recently as 2008, although Murik villagers were citizens and Christians, by conviction and practice, they remained embedded in locally constituted social forms.

The chronotopes of rising sea-levels

In 2007, high tides eroded the narrow beaches on which the central Murik villages stand leaving a shoreline that just barely divided the lakes from the ocean. Amid global discourse about the vulnerability of coastal and small island ecosystems to rising sea-levels, the extent of the damage seemed to justify action by the Somare government. The 2008 budget included funds to purchase land to relocate the three most exposed Murik communities, Big Murik, Darapap and Karau, to higher ground just inland behind the lakes (see Fig. 1).[3] In other words, the tides of 2007 rolled in the ambiguous promise of a new and expanded form of governmentality and citizenship or, to put this promise another way, they rolled in the promise of total redefinition of the political autonomy of these communities in time and space.

Now turning from the background on the Murik, I want to introduce a concept that will help me differentiate among four perceptions of environmental risk and vulnerability that I encountered among the Murik people. Suffice it say that the idea of a chronotope, which I borrow from the Russian semiotician and literary critic, Mikhail Bakhtin (1981), focuses analytical attention on the relationship of human agency to space and time in fiction. By way of illustrating his concept, Bakhtin discussed several chronotopes, several different configurations of actors in the times and spaces in which they are portrayed in narrative. As he put it: "The image of man is always intrinsically chronotopic" (1981:85). For example, in the chronotope of the road or the journey, encounters take place as if by accident rather than through the initiative of the hero, and the narrative focuses on locations, people, on what happens 'along the way', rather than on the hero's subjectivity. Similarly, in the chronotope of "Greek adventure-time," x a couple falls in love at the outset of the narrative, undergo adventures and ordeals, and eventually marry, as if nothing they experienced or did in time and space left any mark on their relationship. As a result, time is characterized as an indefinite series of chance disjunctions. Things happen "suddenly" or "just at that moment…All moments of this…adventure-time are controlled by one force–chance" (Bakhtin 1981:92, 94). By contrast, in saints' lives, actors are changed in the course of experiencing events and thus live in biographical time. They are redeemed and become enshrined. In early 19th century literature of moral development, the *Bildungsroman*, characters become mature individuals who occupy the ordinary time and space of daily life. In other words, a chronotope is conceptual abstraction that features the variable relationship of human agency to time and space in narrative and discourse.

On the Murik coast, in debate about the meanings of rising sea-levels, I found voices taking four differing chronotopes for granted—four differing concepts of human agency in space and time. I encountered people talking in terms of the ancestors, global risk, modernity and doubt. I will now go on to assess each one of these chronotopes. I will argue, however, that at least from one perspective, what was primarily at stake in this dialogue was the waning of ancestral masculinity, and its magical agency.

The chronotope of ancestral masculinity

In Murik cosmology, society consists of human-spirits (*nor*) and ancestor-spirits (*brag*) who are said to be reflections (*sansam*) of each other. Their agency is identical. They both possess canoe-bodies (*gai'iin*) in which they act, or travel through, local and regional space. Both men and ancestor-spirits wear sacred, lineage ornaments (*sumon*)

that legitimize their use of the hereditary magic (*timiit)* that empowers them to succeed as members of society. *Timiit* spells, in their great variety, influence love, dance, debate, warfare, athletic performance, travel and trade. There are spells that alter the weather, create a tsunami or raise sea-levels to destroy beaches. Most importantly, from men's viewpoint, are the timiit spells that facilitate ritual action, the bestowal of lineage ornaments being the key practice in such sacred contexts. *Timiit*, which I gloss as magic, is a noun form of the verb "to do or make" (*o'timiria*) in the Murik vernacular. In other words, timiit is, as I argue, a concept of pre-capitalist agency.

Like the magic of men, the *timiit* magic of the ancestor-spirits is differentiated. The *yabar*-spirit was the most powerful. The magic of the *yabar*-spirits was viewed as strong enough to foundationally transform space and society. According to some informants, they created the regional universe in the shape of an upside-down bowl, like the kind manufactured by and imported from offshore islanders. Indeed, a senior man once told me that Andena and Arena, the two sibling *yabar*-spirits, "wanted to decorate the horizon," which is to say they wanted to domesticate the edge of regional space, and so created the Schouten Islands. The lakes themselves, some men say, were dug out by a huge python-spirit, a *yabar*-spirit who slithered the length of his body underground, and uncoiled itself, dredging up the coastline as it did, in order to make trade possible between Manam Islanders and the Murik. The import of *timiit* magic in the construction of ancestral Murik masculinity in time and space cannot be overstated. As such, I want to call it the chronotope of *timiit*. Before WW I, for example, men made rain magic (*arum timiit*) during the dry season by burying the flesh and head of a homicide victim in a secret spot at which they planted a croton plant (Schmidt 1926).[4] The rainmaker would subsequently repair to the plant, mutter the relevant *timiit* spell, and shake it until clouds burst (cf. Sanders 2003).

Throughout the lagoons, meanwhile, individually named, ancestor-spirits (*brag*) were said to inhabit specific locations in the lakes, for which the latter were named. These spirits were also known to travel about in zoomorphic canoe-bodies, e.g., fish, birds, or lizards, warning people of pending dangers (Lipset 2005). A related event that took place in 1916 caught the attention of Joseph Schmidt, the resident Catholic priest.

> There was very heavy surf. The [Big] Murik people then carved staves 1½ meters long and mounted brag masks on top [of each one]. On March 13, at 6 AM, they went, accompanied by shouts and drumming, to the beach and about every 200 meters, they stuck a rod into the sea, as far as 2 km to Kaup. They spat on the staves, cast spells over them and stuck them far into the sea; it was just then very low tide. The staves were stuck in the sand probably for 2 years before they rotted (Schmidt 1926: 65).

The scene illustrates the position of men in space in the chronotope of *timiit* very well: the men are represented as working in concert with the ancestor-spirits to protect the community from the tides. Note that they erected the masks in a westerly direction so they faced toward the neighboring village of Kaup (see Fig. 1). In those days, as Father Schmidt pointed out, six men in that community were said to know *timiit* spells to cause heavy surf. They would go to the sea, twist their toes in the sand, carry seawater back to a mound on the shore and pour it out there to induce the tides to roll into that spot. Apparently, 5 years later: "In January 1921, there was a very high surf and at that time the people [in Big Murik]

wanted to go to Kaup and make war on them…I wanted to explain things to them, but they said I was stupid…[because] I didn't even know that the Kaup people did that" (Schmidt 1926: 65). In the chronotope of *timiit*, the tides, as well as an adaptation to stop erosion and the whole intertidal zone, were imagined in human terms. Schmidt does not explain what was understood to have motivated the men of Kaup to deploy sea magic against their neighbors. But in Murik conflict, there is only one motivation: the magical alienation of affection, resulting either in a loss of sexual or maternal desire, or both (Lipset 1997). As a result, I want to add a second concept to my analytic toolkit: the Lacanian notion of symbolic phallus in the time and space of the other (Lacan 1977). I do not want to get into a lengthy exposition of Lacanian theory in this context. It is enough to say that for Lacan the symbolic phallus is a signifier of an irremediable wound caused by a loss of female desire when the "name of the father" intervened and exiled the subject into a world of emptiness, e.g., the time and space of the other. Murik frogs, in this regard, are instructive.

A story explaining their existence in the Murik Lakes features two fraternal ancestor-spirits, Wamingaro and Matangaro, and their mother, Kamwange. Marabo Game apparently thought so much of it that he insisted on reciting it to me not once, but three times, in 1981, 1993 and yet again in 2001.

Their mother got pregnant…from the wind rather than from any man. They were born and grew up. She cooked for and fed them with water that she got from a well. When she went there to get cooking water, the frog spirit-men that lived in and near it would attack her which made her spill water as she walked home. The two brothers went to the well to help their mother. They saw what the frog-spirits were up to and, upon returning home, they had their mother make little arrows for their bows. After spending a night in ritual preparation, they went back to the well and killed all the frogs. But two frog-spirits, brother and sister, hid and survived the rout. The two brothers returned to their mother with news of their triumph and created a song about it that she helped them compose. They burned up all the dead frogs in a big bonfire. Had it not been for the two frogs who hid, there would not have been any frogs left in the Murik Lakes.

Here is a rendering of one dimension of the Lacanian phallus. To begin, observe that the story dispenses with a paternal metaphor altogether. "Their mother got pregnant…from the wind rather than from any man." The two brothers do not lack for maternal love, however. Rather their mother's love is depicted as vulnerable not to the father but to a different kind of other. The triad consists of a nurturant mother, her two dependent sons, and frogs, who appear not as frogs per se, but as frog spirit-men. That is, they do not stray too far from a masculine form. The sons desire to defend their mother from the gauntlet set up by the frogs which threatens her (desire expressed in her) role as giver of food and love to her boys. The story thus admits to this nurturant aspect of their dependency upon her without qualification. What do they then become? They become warrior-sons who must be fed before they can go to battle. Their agency must be augmented by magico-ritual that separates them from her, a little, anyway. They do not make their own ammunition. Their mother makes their arrows. They carry word of their success back to her, to receive her love, and she suggests that they sing their names to commemorate the victory.

The story is less about the survival of frogs as much as it portrays masculine dependency on their mother's desire. Indeed, the frogs' survival is not even represented as arising from phallic agency but phallic omission. Their survival does not result from the frogs' own wits, but mainly from the brothers' inattention. The story of frogs in the

Murik Lakes reflects upon the comprehensive dependency of the symbolic phallus on the nurture of the maternal other.

But there is another spell, called Serai Clay or Mud, which is attributed to the power to restore an eroded beach which suggests that this dependency also has a sexual dimension. Like most *timiit* in Murik culture, it is imported from elsewhere in the region. It is said to have come from the Sissano Lagoon area about 200 miles to the west during the late colonial era. Wangi, a retired policeman, and Wanuk, another senior man, told me a story about its origin, the principle antagonist in which was a spirit-man, called Masangi.

> Masangi lived on an island [offshore Serai village]. When the wind came up, he set sail. Everyone [on the mainland] saw him coming. The men fell asleep on the beach. Masangi had [love magic]. [He] had intercourse with all of their wives and sisters. This went on for a long time. The men [eventually] spied on what he was doing and set a plan to retaliate.
>
> They sent their wives to work sago and [then the men] had a meal together.
>
> Masangi came ashore. When he began to have sex with the first woman, they threw spears and killed him. They buried him in haste. One of his legs, bent at the knee, poked out of the ground. Sand gathered about his knee and the beach expanded from there, so much so that his burial site became surrounded by bush.

If Murik frogs may be seen as a meditation about the dependency of the symbolic phallus on maternal nurture, then the story of Masangi may be viewed as one about its precarious dependency on her desire in the time and space of the other. It no less situates the phallus in a space dominated by Masangi, who is a stranger, at least in a limited sense. His origins are known, his arrival visible. But, as a spirit-man, he can subordinate time, space and society to his phallus. He puts husbands to sleep, like babies. He magically arouses wives' desire, like an *uber*-husband. The men of Serai must then redeem the symbolic phallus, which is to say that they must reclaim their statuses as husbands and brothers from Masangi. To do so, they first have women feed them. Then, they spear Masangi to death while he is having intercourse. Their vengeance reclaims women's desire, but although the men succeed, in killing Masangi they make it clear that intercourse is a moment of vulnerability. But there is a little more to say about this story. It associates a body-part, the knee of the spirit-man, with the buildup of some kind of land about it. In semiotic terms, the knee metonymically signifies Masangi's corpse. But what does the corpse itself signify? Masangi is killed by the husbands of the women he displaced. The body of the dead spirit-man thus signifies the men's deprivation from feminine desire as well as their aggression. The magical substance which is created by their act becomes an emphatic representation of the beach as phallus (cf. Dening 1992:258), a signifier of their collective agency in and over space. Wanuk went on to suggest this very association when he discussed how Serai Clay magic is literally cast.

> Today, men take a bit of soil from his grave and throw it around a beach. [If it] is quiet, the land will build back up. When you make Serai magic, women must be excluded from the space because it was women who started the whole story.

Masangi was killed because of them. Women become taboo to keep him from taking back the land.

Today, the environment is understood in multiple terms. Climatological, geophysical, maritime and mechanical knowledge, i.e., in a modern chronotope of time and space, rival ancestral knowledge. The efficacy of masculine agency—*timiit*—in the ancestral chronotope is being emasculated. Its relationship to time and space is becoming 'other.' It is becoming alienated from its older vulnerabilities and dependencies on the desire of the feminine other. Becoming 'other' does not imply the chronotope of *timiit* has been completely castrated, from a symbolic point of view, or that it ever will ever be. In 1981-82, and even as late as 2012, I still heard men beat hand drums as part of a *timiit* spell to call the ancestor-spirits to stop torrential downfalls. But now, the chronotope of *timiit* for which their percussion stood, was being interrogated by rival chronotopes.

The high tides of 2007

In February and September 2008, I twice returned to the Murik Lakes to appreciate the situation.[5] Let me first state how startled I was by the sight of the rather violent shifting boundaries of land and sea. The beach in Darapap seemed to have been eroded by about ½ to ¾ of a mile, if not more. The coastline was skewered with severed trunks of coconut palms and casuarinas trees, some lying flaccidly on their sides, others, broken off above their root systems, protruded out of the shallows, looking like amputated members (see Fig. 2). There was universal perception in the villages that environmental change was taking place. The phrase of the moment was: "The tides are high!" (*Pwakan apo*!). At the same time, I was able to distinguish between two chronotopic appraisals of the extent of the risk they posed to space, time and the communities (see Wildavsky and Dake 1990).

One appraisal assessed the risk as critical and the future as uncertain. For example, in the village of Big Murik, where all the coconut palms had been washed out, I spoke to a small group of men in the shade of a canoe-shed. A middle-aged man summed up this catastrophic sense of risk. "The sea is killing us," he said. "Now the distance between the sea and the lakes is very small…We don't know what will happen. We will drift like logs."

The contrary position was stoic. Joe Kabong, a man of late middle-age, who had retired to Karau village after working as a prison warder for several decades, expressed it well. The Prime Minister, he granted, was angry because no date had been set to resettle. "But [we Murik] people do not complain about the sea. It has always been a constant threat and battle." Indeed, the mood (I sensed) in the villages affirmed the

Fig. 2 Tidal damage to the Murik Coast. Photo: David Lipset

attitude that environmental peril remained part of everyday life and had not become 'other.' People, it was true, did seem to feel a little angst and dread, but no panic. In Wewak, the capital of the East Sepik Province, where Murik villagers have lived hard by the seashore in rude, ramshackle, squatters' camps for decades, I spoke to Malai, who had featured, together with his wife, Lady, in the extended case study of an inter-village brawl around which I organized my 1997 monograph on Murik social control (Lipset 1997:217–263). Malai, by now middle-aged, had amounted to a man of no particular distinction outside of Darapap village in the intervening years. In 2008, I found him living in town, where his wife had taken a job in the mess of the new tuna cannery that was owned and operated by South Seas Tuna Co., an Australian-American concern. The tides were troubling, he told me, but the times were not desperate: "the sea cut down about half the coconut groves, leaving the village in bad shape, but still livable. "If a perception of risk had long been part of their coastal adaptation, then the tides of 2007 did not constitute a crisis, but were rather more of the same.

Chronotopes of the tides

If everyone agreed that the tides of 2007 were the highest in their lifetimes, their meaning, and therefore what to do in response to them, was divided. On one side were people who viewed the tides as signifiers of 'nature' in a time on the brink of a catastrophe caused by global warming. This view was held and advocated by the salaried, urban middle-class, political elites, but, as well, by ordinary villagers. The rival side was informed by advocates of *timiit* who believed in magical explanations of, and who proposed magical solutions to, the risks the tides posed. Simultaneously, uncertainty and mistrust was widespread: men were unsure about the causes of the high tides and either wanted to ignore them, or just did not know what the future might hold. With respect to the prospect of resettlement, there was some urban, middle-class support for the Prime Minister's initiative. Young village men, by their action, also showed interest in the project. But most men (and women) of all ages were reluctant to move. While acknowledging it, they implicitly disavowed the severity of the risk. They doubted the state's efficacy. And, they had suspicions about global capitalism. In this dialogue, time, space and agency constituted a world becoming, a world without a single chronotope. It was a world constituted by heterogeneous and contradictory chronotopes in dialogue.

The chronotope of World Risk Society

If the environment in modernity may be constructed by a confident, means-end rationality that has results, according to Beck, the reflexivity that characterizes what he calls world risk society admits gaps in environmental knowledge. Risks are imperceptible, unpredictable, noncalculable, etc. This reflexivity calls for a different kind of political agency, he argues, one based in a cosmopolitanism that takes "globality" to heart (Beck 1999:17). His analysis would seem to offer opportunities to otherwise marginalized, postcolonial voices who espouse multilateralist, green ideologies. From 2005 to 2011, Sir Michael Somare, obviously motivated by local concerns for the Murik and PNG, as well as by global goals, advocated this kind of politics. In 2007, for example, he spoke to the Lowy Institute for International Policy in Sydney Australia.

> I was asked to address you today on Issues/Challenges facing the region. Consequently, I have chosen Climate Change …As I have highlighted so many times, climate change is real and upon us! I know some skeptics in the scientific community ridicule this assertion as not supported by what they call—unquestionable empirical evidence. Well, some of us do not need science to prove this phenomenon. We live it! Papua New Guinea and many of our Pacific Island neighbors, including Australia, are already suffering dire consequences…In fact, in my own village, we have moved for the fourth time in one generation in order to escape flooding on one side and sea level rise on the other. We are probably among the first environment refugees. Our mangrove ecosystems and, in fact, our very way of life, is being destroyed (Somare 2007).

Here, the Prime Minister appears in the chronotope of world risk. The risk he perceives is palpable. The times are imperiled. Environmental degradation is entirely self-evident, and its facticity need not be documented by experts. The relationship of the environment to society, he argues, must be redefined in distant, globalized terms. The appropriate mitigation should be based in an ideology of interdependency: rich and poor states must cooperate.

> My vision and that of my government is to transform these challenges…into a framework for environmentally and social sustainable economic growth. Obviously, collective action is required now. Let me be specific. First, the world can no longer account for the environment as an 'externality.' Our natural environment and her services are not 'free' to society. Once we lose these services—and experience around the world suggest—often forever, the costs may prove catastrophic for global society. Therefore, we must integrate ecosystem services into our global market constructs. Carbon sequestration must only be the first step. This must be followed by valuations for biodiversity, water purification, waste disposal, crop pollination, etc. For this reason, we must now transform our natural environment into 'environmental capital.' These valuable ecosystem services must be harnessed as engines of wealth creation for those rural communities that have traditionally cared for these assets (Somare 2007).

Obviously, a speech made to such a cosmopolitan audience in Sydney Australia, such as that gathered in the Lowy Institute, was not one the dispersed Murik community in PNG attended or heard. I excerpt it here because it expresses the terms in which the Prime Minister thought about the danger climate change created and how he imagined the market could be used to manage it.

Under the influence of Somare and the world risk chronotope through which he spoke, the employed, middle-class also viewed the situation as dire. In the parking lot of the Comfort Inn in Port Moresby, the national capital, I spoke to Allan Ginau, a grandson of a community leader in Darapap, and his uncle Elijah, another retired prison warder. Allan had not grown up in the Murik Lakes, his father having been employed as a teacher in another part of the country during his childhood. In February 2008, he just returned from 2 weeks training in Brisbane where he had been certified to work as a pharmacist in Australia. I asked Allan about the tides in the Murik Lakes. "Green-house gases," he answered abruptly. Elijah, his uncle, and less of a cosmopolitan

than his nephew, nodded. "Green house gases," he repeated with no apparent conviction. Allan offered nothing further, except to mention the 2008 budget appropriation the Somare government had announced to compensate hereditary land owners so three Murik villages could resettle on their land. The state might expand its discipline over this, rural community or not. The cosmopolitan and modernist young pharmacist passed no judgment.

The voices of the Prime Minister and Alan Ginau spoke for world risk chronotope in which the tides signified the influence of the global 'other.' That is, the tides resulted from a chain of causes operating at a distance from, and beyond the control of, face-to-face time and space. The two also viewed Murik resettlement funded by the state as a legitimate solution, even though it was independent of community agency, and would supersede the community's unmediated claim to its "place-world" that arose from cosmology and the ethnohistory of cultic warfare in particular (Basso 1996: 6). Many villagers agreed. In Mendam, I met a large group of men in one of their Cult Houses. During the ensuing discussion, an ordinary looking villager explained that the tides "come on their own account. Nature. The tides go with the phases of the moon. But they have become unbalanced." If there was irony in his remark, it stemmed from the relationship between the venue, not a parking lot, but a Male Cult house, a locus of the chronotope of *timiit*, and the chronotope of world risk he was advocating. In the sociology of contemporary PNG, the idea of the subject cast adrift in the time and space of the global 'other' cross-cuts geography or class.

The chronotopes of timiit and modernity

In answer to the chronotope of world risk, men talked at length about the history of rising sea-levels and tsunami events in terms of the chronotope of *timiit*. Wanuk, whom I already introduced above as one of the narrators of the story of Serai Clay, is a senior, urban villager who lives modestly in Wewak town where one of his daughters manages a branch of WestPac bank. When I asked him about coastal erosion along the Murik coast, he catalogued of three previous tidal events to which the Prime Minister had evidently alluded in his speech to the Lowy Institute.

> The first one took place before WWII. A big women's initiation was going on in Darapap. The second time was right after the war. Waves burst through the village and swept a wooden kingpost-spirit out of a [Male Cult] house. The post was retrieved by feasting partners in the neighboring village of Karau who returned it and were compensated with a big feast. In 1951, the big wave wrecked Darapap and drove the villagers to resettle in the mangroves. They lost everything. Now is the fourth time.

I want to draw a couple of conclusions from Wanuk's little chronicle. The current tides, he seems to be saying, were not new. The risks past events posed were temporary. Resettlement had precedents. And, most significantly, the representations of space in it were set in ritual constructions of masculine time (Leach 1961). That is, the tides disrupted the symbolic phallus. Elijah Ginau, also introduced above, added important details about the apparent exception to this last point, the tsunami of 1951.[6]

> The sea was destroying Darapap. I went with my father and his brother to work sago and trade for garden produce with inland trading partners. Upon returning to the village, we built and decorated platforms on the beach. We piled up garden produce, sago, cooked pork and fish on the platforms. We left most of it there, but we threw some of it into the ocean for the water spirits. In a few months, the beach returned and our fathers planted coconuts anew.

The men, in other words, made a characteristically Murik pact with the ancestors. A gift of food offered to the water-spirits obliged the latter to reciprocate work, a magical restoration of the beach. Here was an example of the masculine subject acting in terms of *timiit*-based chronotope—in 1951—to bring the tides to heal. They made no use of a 'technofix,' the importation of expertise to build a sea wall or plant a new reef, but used *timiit*, gendered, personalized and context-specific, as it was. As an answer to the chronotope of world risk, this was an example of the two chronotopes in dialogue.

At a 2008 meeting I convened in the Darapap Male Cult House, a senior man called Ker listed the same episodes of rising tides and storms. He also recalled that as a result of the 1951 tsunami, houses were rebuilt over mangroves roots within the lakes. Ker added nothing further about the event. But seeing him, a longtime leader of the Seventh Day Adventist Mission (SDA) in the village, and listening to his account subsequently put me in mind of another story that I heard some 27 years earlier about the arrival of the new mission.

> We invited the SDA Mission into Darapap in 1951 because they promised to open a school for us which the Catholics had not done. The new SDA God got angry. Most everyone joined the new mission. But men went on staging outrigger-canoe consecration rites (see Barlow and Lipset 1997). A big wave broke over the village, knocking over all the coconut trees but two, ripping up houses, and destroying everything in its path. All the canoes drifted away…The senior men decided to make a big feast for the ancestors. They thought the …[ancestors] were telling us to stop making feasts or suffer the wrath of papa God.

In Lacanian terms, the tsunami of 1951 was a warning that senior men better cut the symbolic phallus lest the community suffer another environmental reckoning. In other words, the meaning of the Murik Lakes had begun to shift. The agency of men in time and space was no longer fully constituted by *timiit*, which is to say by the ancestors. The tides were becoming 'other.' They were becoming an object of independent status acting over and against the male subject. Their impact in and over time and space was becoming polyphonic and contradictory.

Rumors of *timiit*-causation still floated around the tides of 2007. Malai, also introduced above, surmised that "somebody had planted a [Cordyline shrub] … in the village to [magically] pull the sea because of one jealousy or another. In the past," in continued, "men used to put food at the base of these plants" to cast this kind of spell. The 'somebody' in question at whom he was pointing his finger was Makus, a young, middle-aged man who had since quit the village to take a job in the provincial capital as a community sales representative for Garamut Enterprise Limited. "The jealousy," as Makus subsequently explained it to me, had to do with a property dispute.

> I built a house on the beach. Pame's kin got angry and they cut down one of the coconut palms [my father] planted. So I cut down one of their coconut palms. That was where it ended until the sea destroyed the beach and they began to accuse me of bespelling the beach. "No," I answered. "It is nature. It is cyclical. It is seasonal. Ice broke."

Makus denied the accusation in terms of modern and world risk chronotopes. The tides were 'other.' Their range varied regularly, without connection to magical agency, but had been altered by global warming. However, Makus did concede that there was more in his philosophy than these views of the tides. He had, indeed, inherited sea *timiit* from his father, he told me, who had learned it from a sister. Making the spell work, Makus went on to explain, required its precise utterance in an isolated spot and with total concentration on one's enemy. The agency of the spell, that is to say, was contingent on separating the subject from women, thus to secure this ritual form of masculinity from their conflict-ridden and polluting sexuality. Through the temporary subtraction of cross-sex relations, magic constitutes the symbolic phallus by removing 'him' from the space and time of the other (see M. Strathern 1988). Here, the contradictory meanings of risk was expressed: the chronotope of *timiit* was affirmed and denied; the chronotopes of modernity and world risk were affirmed and denied.

The chronotope of doubt

In the chronotope of world risk, unilateral agency becomes problematic. We may know that wealthy states emit more carbon into the environment than poor ones, but as "conflicts of accountability" are irresolvable (Beck 1996:28) what can be done? It should come as no surprise that a chronotope of doubt was no less audible than the rival chronotopes I have analyzed thus far. Many villagers were simply unsure why sea-levels had risen so high. The idea of global warming did not persuade them. Nor did they have anyone to scapegoat and blame (Douglas 1990:2). They did not deny that the range of the 2007 tides was extraordinary, but they either wanted to ignore them, or just did not know what to do.

Luke Pimi, a middle-aged man, voiced this kind of doubt. Like many ordinary villagers with modest education, he attends closely to the cosmopolitan scene in the province, nation and the world via radio, newspapers and conversation. I have worked with him extensively over the years and we address each other as adoptive brothers. His reference groups are largely, but not entirely, local and,) as such, his voice may as well stand for a major constituency of rural men. One morning, we breakfasted on sago breads and freshly smoked fish in his junior co-wife's house. I asked him about the rising sea-levels. "The sun has become hot," he answered, "and ice broke, so the tides rose…We say it is 'nature.' But we are in the middle. There is not one man who believes it is true." Luke's acknowledgement of and skepticism about global warming summed up the ambiguity of the present. But his voice only expressed one side of men's dilemma.

In Euro-American worlds, climate change-based risk has laid bare the limits of modern rationality, that is, the limits of autonomous means-ends calculus in space and time. On the Murik coast, it has rather exposed the decline of the chronotope of *timiit*, or ancestral masculine agency in time and space. I came across an apt expression of

this latter point while visiting with a group of men of various ages whom I found sitting together in a Male Cult house in Karau, the Prime Minister's home village, on a quiet Saturday afternoon, smoking and talking amiably. A senior man spoke of the uncertainty men were experiencing.

> We used to say rising tides [were caused by] spells, but today the sea has its own way. Nature or spells. If a man was jealous, he could cast a spell that would make the sea destroy a village…We do not have Serai Clay magic to build up the beach. We do not have the magic our fathers had. So we wait and cannot do anything, except move.

In conclusion to his declension narrative about the loss of masculine agency, the informant raises the sad prospect of resettlement. Resettlement for men was therefore not a pragmatic, or instrumental, adaptation, as Michael Somare, then the Prime Minister, saw it. In response to a chronotope in which the environment was subject to magical utterances, resettlement might connote nothing less than symbolic castration, an utter defeat of the masculine subject, an exile into the time and space of the other. Of course, given such stakes, the possibility of resettlement was no less debatable than the meaning of the tides.

Chronotopes of resettlement

I spoke to Sir Michael Somare in his Wewak office the day after he returned from Karau village where he had broached his intention to build a new Male Cult house. On the one hand, Sir Michael appears, when speaking at the UN or in parliament, to be a cosmopolitan actor in the chronotope of world risk. Now, he was undertaking an agenda defined in terms of the chronotope of *timiit*. Sir Michael spun the new building, however. It was not to be the foundation of a new community. Because of his resettlement initiative, it would rather be "the last men's house" in the three eastern villages. Somare knew that villagers were unhappy about moving, but he was adamant. Combining the chronotopes of modernity and *timiit*, he argued that the Murik could not expect to survive on, much less compete for resources from a mere sandbank. Their very future, he declared, was at stake. "This is a once in a lifetime opportunity. Their tribesman is Prime Minister: I have allocated money for… [resettlement]. This may never happen again." The risk posed by the tides not being viewed uniformly, Somare was doing his best to promote his plan in terms that might appeal to everybody. Resettlement would be a boon to economic development. The state might not be trustworthy, but he was a kinsman, who was demonstrating his primordial *bona fides* not just by fulfilling one of the conventional duties of Murik leadership by erecting a new Men's House and initiating sons in it, but by demonstrating the magical power of his *timiit* in so doing.[7]

In Darapap village, support for the Prime Minister's resettlement scheme was evident in the strenuous effort a group of about 125 young men put into clearing several miles of an overgrown channel called Soron by hand. The goal of this project, which was government sponsored, was to link the Murik Lakes with the land that the state was negotiating to purchase. In February 2008, men insisted that I go see the great good they had done. Four men and I took off in a fiberglass dinghy and motored for an hour or

so across the entire width of the lakes. After the mangrove forests thinned out and land began to appear on either side of the shallow, narrowing channel, we poled on and on for several more hours. The workers had planted tiny, little mini-gardens along the way and they had nailed Michael Somare for MP posters to trees. When we finally reached what appeared to be the end of the channel, I was given a croton bush to plant, as if the act of getting there was akin to a homicide. But it just turned out to be the site of a work-stoppage rather than the beginning of dry land. Food and money had not been provided to the workers, my companions explained. In anger, the young men accused government officials of misappropriation of funds and staged a walk-out.

Initially occupied by refugee-ancestors resettling from upriver and more recently during WW II by villagers fleeing Allied bombing, Soron channel had nevertheless been opened for the first time since the late 1940s. While the young men worked, they found what people were calling a Japanese army cap, a British flag and a very old anchor pole (which looked like a stick to me). Although these curiosities aroused nostalgia, they were not exactly souvenirs of an authentic era in Murik culture, now lost. Neither were they relics of a sacrificial body. The stories to which they gave rise, as well as the objects themselves, evidenced a past no less embedded in globalized space than the present. But the anchor pole, which signified agency in the chronotope of the ancestors, did seem to be a bit more fascinating, although it was subject to less narrative, than the other two objects. Of course, it could not be identified as someone's property, or heirloom. It lacked marking, so there was no way of knowing who had left it behind or when. Neither was it an exotic antique. It was not a trace of a particular lineage, or of a more generalized context of use-value, now gone. There is nothing unusual about anchor poles in contemporary Murik canoeing. The nostalgia it provoked was different. Its retrieval from the channel, together with the two other things, which both signified dispossession, was evidence that the 20th century biography of the village had taken place in a lagoon in which Murik ancestors were working in terms of a recognizable agency. If a function of souvenirs is to underpin or contribute to a continuous narrative of the past amid a morally questionable present (Stewart 1993:140), the narrative purpose the anchor pole served in the aftermath of the tides of 2007, when the agency of people living and working in this selfsame lagoon had become insecure and uncertain, to evoke their questionable future.

Resettlement in the chronotope of doubt

Doubt fielded desire and desire fielded longing for resolution, fascination with the anchor pole, on the one hand, and confusion, plain, if not simple, on the other. Men, indeed, were disinclined to resettle; and I was able to collect at least three reasons why. For one, as I say, they viewed resettlement as emasculating. At one point during a discussion of the tides in the Male Cult house in Darapap, Wanuk posed a question to an assembly of men. "How many times has the sea taken the village? What did your ancestors do? Flee? "Everyone present responded in unison. "No!" they boomed. Secondly, men expressed attachment to the Murik Lakes—both as livelihood and as collective identity. Elijah Ginau put it succinctly:" The people don't like to garden. They are mangrove men." Another senior man appealed to the pleasures of home, when he vowed that despite pressure "to resettle [inland]…and rebuild our village. I will stay on the beach where the wind is good and the fish are plentiful. A lot of people share my view.

They say, 'Buy the land, we can garden on it! But we will stay on the beach.'" The third reason men expressed inevitably rooted attachment to place in primordial ties as well as to adaptation. "We live here," another senior man averred. "We live here where our fathers and ancestors lived. We know how to live here. So we have a question: why should we move?" Familiarity with place presented a conservative guide to action, identity and community (Basso 1996). In the chronotope of doubt, resettlement was also said to pose several kinds of risk.

One concerned the morality of their inland neighbors on whose property the Murik were to resettle. In a Male Cult hall on the eastern edge of the Murik Lakes (see Fig. 1), after discussion about the tides and resettlement turned to other matters, a young man approached me and sat close. Unprompted, he told me that I should appreciate how much youth feared the prospect resettling inland.

> We worry …about moving [to live] near our… trading-partners. It could be dangerous…If a boy accidently trespassed on one of their gardens or killed one of their pigs, we worry about what they might do. They would kill you without a second thought. We beach people do not do this. We have rituals [of conflict resolution].

Murik relations with the horticultural communities that ring the lakes have been tense. In pre-colonial times, the tension was cross-cut by hereditary trading partnerships, according to which the inland peoples likened themselves to "trade mothers" of the coastal people because they provided the Murik foods they did not grow themselves. From the Murik side, this maternal trope also had rhetorical purposes, although they were rather jaundiced (see Meeker et al. 1986:49–50). At the same time as they traded, the beach people raided the inland communities. The Murik dismissed their 'trade mothers' as violent yokels who lacked sacred insignia and the ethics they signified. These pre-state stereotypes were audible in the young man's apprehension about the inland people's temperament and perhaps in his hope that other adaptations might still turn up that would make moving unnecessary. "We asked Somare," he recalled, "to bring in a dredge to pile up sand by the beaches to rebuild them." A son of the village catechist joined our conversation just then. Bringing in such a machine might save the day, he agreed. Besides, resettlement would yield other risks.

> We are having a problem at the moment with the landowners of our settlement … in town. They are denying our rights to live there (see Lipset 1985:84). Young people are claiming that the land transfer undertaken by their elders was ill informed and should not be respected. It would be bad if we had the same kind of problem here. Subsequent generations of landowners, we fear, will challenge our rights, knowing nothing about the earlier transfer that took place.

In a way, these concerns about the perpetuity of land tenure are related to the first youth's fears about living in close proximity to the landowners. Both express doubts about and question whether the postcolonial legal system was up to the task of guaranteeing the safety of their community in future time and space. The duty of men, and the ability of their Male Cult—the symbolic phallus—to protect the community, having been abdicated long ago to a succession of colonial administrations, the new risks anticipated to arise from resettlement would emasculate it yet again.

Together with these anxieties, many men saw the resettlement plan as nothing more than as a scheme to defraud Murik people of oil royalties. [8] Johnny Sakara, a retired sergeant-major in the Papua New Guinea Defense Force, recalled a meeting he attended with Nancy Sullivan about transferring land rights to oil prospectors.[9] Sullivan cautioned everybody to agree to nothing unless it was in writing and then signed by all the relevant parties. Johnny Sakara went on, asking rhetorically about possible underlying motives behind the resettlement plan.

> That is why they want us to move inland; so they can drill for oil. Iraqi oil is not available because of the war. The villages of Karau and Darapap have oil. In upcoming months, ships will come to Port Moresby and bring equipment to Darapap. The drilling they will do will destroy the fish in the lakes.

Who were the 'they' imagined to benefit from this scenario and pollute the Murik Lakes? 'They' were certainly not 'self.' Instead of ghosts of ancestors manning ships loaded down with the wealth and technology of the West to give to Melanesians (see Lawrence 1964), these servants of global capitalism in cahoots with the postcolonial state, would come to take wealth from them. Although it was then ruled and personified by their kinsman, the state was in quite a foul odor on the Murik coast in 2008. Joe Kabong, the retired prison-warder I introduced above, made a wry observation: "The tides keep at us, unlike the government, which ignores us." For Beck, world risk exposes the limits of the autonomous sovereignty of neo-liberal, as well as nativist and fortress, states. In Murik, the tides and the politics of resettlement had also called the state into question. Through incapacity or plain corruption, villagers were given to complain that PNG had accomplished little by way of providing basic services. Now it was to resettle three of five Murik communities as by way of providing for their environmental security? Men answered with doubts and passivity. To their chagrin, neither the state nor the symbolic phallus were masters of their domain.

Conclusion: masculinity and the culture of rising sea-levels among the Murik

While no view of the tides or the prospect of resettlement was left unscathed, there was consensus about one thing. The tides were high, everyone agreed, and their abnormal range meant something. But what? The tides, the PM said, were a symptom of anthropogenic global warming that demanded resettlement as well as a new of valuation of ecosystem services. Some villagers agreed, at least with his view of cause. The tides, as they saw them, had become unbalanced by ice melting somewhere else in the world. The damage the tides had done, answered more locally-oriented men, meant that a community-based conflict had caused someone to cast a spell upon the beach—which implied that it could be magically repaired. Others expected the tides to subside, just as in the past, whether through some sort of modernist adaptation or 'natural' cycle. Resettlement was therefore unnecessary, except to supplement the Murik fishery with new cash-cropping opportunities. Still others shook their heads. The meaning of the tides was incomprehensible to them, and what to do was unclear.

The latter confusion, I think, captures an important theme in postcolonial environmental discourse. Rather than constituting a form of what Ingold has called

'interagentivity' (Ingold 2000), the actions of all of the lifeforms at play in these lagoons, be they human, ancestral, modern, or global, are being emptied out of content, not to become increasingly powerful, but increasingly at risk.

A composite chronotope is surrounded on all sides by an alien world and has itself become half-alien. In it, human canoe-bodies no longer travel about in the space of the ancestors and vice versa, nor do the ancestors travel about in the motorized fiberglass boats of human-spirits. Even prior to resettlement, dislocation is already taking place, dislocation that is signified by growing incomprehension of environmental change and doubts about the future of society. Ingold's concept of interagentivity—*timiit*-spells, in Murik terms—no longer explain rising sea-levels as having come under the influence of local, human agency, in a persuasive way. The tides are understood to result from global warming, or an unusual natural cycle, or they are a mystery, all of which constitute a gap in the chronotopic image of man in time and space that cannot be expressed through a metaphor of action or interagency. The tides rather signify a contradictory engagement and disengagement of multiple chronotopes which are not homogeneous with either the past or the present, but are part of a world without a single spatiality, temporality or concept of agency.

If not agency, what then? How can dissensus and contradiction, how can lack of understanding be conceptualized? The Murik tides were spoken of both as separate from, and part of, society (and vice versa). To a certain degree, I think this case suggests that environment and society constitute each other in and through a refractory dialogue.[10] Rising sea-levels threaten the symbolic phallus—the chronotope of *timiit*—not only through destruction of 'his' mangrove lagoons, but by giving rise to contrary claims about 'his' agency in time and space. The rising tides in the chronotopes of Murik ancestors, modernity, world risk society and doubt do not have the last word, at least, not yet.[11] Narrow barrier beaches, dividing the Pacific Ocean from the lagoons, still keep the tragedy at bay (see Fig. 3).

Endnotes

[1]On the danger rising sea-levels pose the Murik Lakes, see Hughes and Bualia 1990, Sullivan 1990, Pernetta 1993; Legra et al. 2008.

[2]Mangroves are historically vulnerable to ecosystem collapse, see Ellison and Stoddart 1991. On mangrove ecology and sea-level rise in the Pacific, see Ellison 2000; Gilman et al. 2006. On this danger in general, see also Kennish 2002.

[3]US$1,315, 280 were allocated, half for Murik resettlement and the other half for the resettlement of Carteret Islanders. The funds were specifically assigned to the Murik Resettlement Administration which had been created in 2006.

[4]In 2008, I myself was given a croton plant to stick in the ground to commemorate my having traveled to the end of an overgrown channel that young men had been clearing to make a route to dry land amid the high tides that had eroded the coast.

[5]My aims were to inspect the coastal erosion and do a multi-sited survey what the environmental crisis meant to people and to ask what they were thinking about the prospect of relocation. I met and talked to Murik in Port Moresby, the national capitol, in Wewak, the capitol of the East Sepik Province, in four villages where I convened meetings in Male Cult houses and met with selected informants. I elicited and

Fig. 3 A new channel into the Murik Lakes, 2012. Photo: David Lipset

encountered the views of a range of ordinary villagers, young and old, male and female. I collected perspectives of political actors, both at the state- and local-levels. I interviewed members of the employed, middle-class as well as unemployed, urban villagers. What I got was not a comprehensive sample in a quantitative sense, but it did represent the strongest currents of opinion among the main categories of men in the dispersed society. This multi-sited research, I maintain, avoided the banalities or bias that may arise from the mobile sort of methodology that I used because of my longitudinal relationship with Murik society that began in 1981. I knew the main categories of men that needed to be represented, that is to say, and I knew where to find voices that could speak candidly and reliably on their behalf.

[6]The National Geophysical Data Center reports that a tsunami event did indeed take place on the north coast of PNG on 2.22.1951, possibly the result of an offshore earthquake. See < http://www.ngdc.noaa.gov/nndc/struts/results?t = 101650&s = 10&d = 228,185,186,76,78&nd = display&eq_0 = 10968&eq_12 = 3145>

[7]At one point, Somare had also been promising villagers that graves of their kin would be safer in the aftermath of a move to higher ground.

[8]A Vancouver based firm, Invicta Oil and Gas Ltd., bought shares of Cheetah B.C. in 2007. The latter company held license for 8.4 million acres of petroleum exploration in PNG. Among these included a license to prospect in the Murik Lakes and the Lower Sepik, see PNG Resources 2007 (4):18.

[9]Nancy Sullivan Ltd was a social impact NGO that she operated in PNG. See http://www.nancysullivan.org/

[10]For surveys of the literature on the shift away from nature/society dualisms in environmental sociology and anthropology, see Woodgate and Redclift 1998; Goldman and Shurman 2000.

[11]The dialogue no doubt goes on. On 8 December, 2008, severe sea swells "caused by low depression in the waters of Guam and New Caledonia" swept across the Murik coast damaging property but injuring no one. PNG, several neighboring Pacific states, and independent agencies, such as the UN, Save the Children and OXFAM, among others, responded with disaster relief.

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Consent for publication
Informed consent was obtained from the children's parents for this publication of this image.

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